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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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November 8, 2011

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Ms. Allison Hiltner
Remedial Project Manager
US EPA, Region 10
1200 Sixth Avenue, Suite 900 MC ECL-111
Seattle, WA 98101

Re: Lower Duwamish Waterway Site Remedy Review

Dear Ms. Hiltner:

The Washington State Department of Ecology (Ecology) appreciates this opportunity to provide the state's perspective on the Lower Duwamish Waterway (LDW) cleanup to EPA's National Remedy Review Board and Contaminated Sediments Technical Advisory Group (NRRB/CSTAG).

The LDW is part of Puget Sound which is one of twenty-eight estuaries of national significance in the U.S. In December 2005, Washington Governor Chris Gregoire and the State Legislature launched the Puget Sound Initiative, a comprehensive effort by local, state, federal and tribal governments, business, agriculture and environmental communities, scientists, and the public to restore, protect and preserve the Sound by the year 2020. The LDW cleanup is a huge part of that effort and is one of Ecology's highest priorities. We have a duty to protect this national treasure using the regulations, permitting requirements, and mandates set by our Legislature. In this letter we will briefly describe how our state regulations apply in the planning and implementation of the LDW cleanup and issues surrounding concurrence by Washington in a proposed federal remedy.

Ecology has been working collaboratively with Region 10 EPA for over ten years on the LDW. Ecology signed a joint Agreed Order on Consent with EPA and the Respondents (King County, City of Seattle, Port of Seattle, and The Boeing Company, collectively the Lower Duwamish Waterway Group, LDWG) in 2000¹ and has been working with EPA under a Memorandum of Understanding (MOU) since 2002.² Under this MOU, Ecology is the lead agency for source control activities and EPA is the lead agency for sediment remedial investigation and feasibility study (RI/FS) activities. Ecology and EPA have long understood the need to integrate source control and sediment remediation in working towards comprehensive and sustainable cleanup.

¹ Administrative Order on Consent for Remedial Investigation/Feasibility Study, U.S. EPA Region 10, Docket No. CERCLA-10-2001-0055, Ecology Docket No. 00TCPNR-1895.

² Lower Duwamish Waterway Site Memorandum of Understanding between the U.S. EPA and the Washington Department of Ecology, April 2002.

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Due to this collaboration, considerable progress has been made toward cleanup of sediments and nearby upland areas. Ecology has supported EPA extensively in providing technical review and comment to complete the LDW RI and finalize the FS, including thousands of hours of staff time and considerable public involvement efforts. As lead agency for source control, Ecology has devoted even greater resources to implementing that effort and has accomplished a large and diverse amount of work in cooperation with EPA and municipalities. A brief summary of the source control work was provided to EPA for inclusion in the draft Proposed Plan that illuminates the scope and provides insight into how it would integrate with the proposed sediment remedy. A more comprehensive source control record is published periodically.³

Keeping in mind the need to integrate the immense amount of source control work performed in the LDW basin and the need to evaluate and implement the sediment remediation, Ecology offers the following points on the LDW sediment remedy:

Protecting the sediment remedy will require increased resources and policy support from multiple agencies, including EPA.

It is anticipated the existing levels of source control will stabilize or slightly reduce lateral contaminant loading at current levels. These existing levels of source control effort will not be sufficient to reduce the lateral contaminant loading to protect the sediment remediation. Reducing lateral loads to the sediments will require adoption and efficient implementation of a plan that integrates several aspects of source control with the sediment remedy.

Active participation will be required from Ecology, EPA, and municipal programs involved in cleanup, stormwater, and air quality management. For example, policy support will be required from EPA's Office of Water in aligning Total Maximum Daily Load (TMDL) and National Pollutant Discharge Elimination System (NPDES) requirements with cleanup needs. While these water quality programs such as NPDES permitting are delegated to the State of Washington, federal policy must support integrating cleanup standards into TMDL and NPDES implementation.

To protect sediment cleanup, water programs must base their permits and TMDLs within contaminated sites on attaining cleanup standards, as well as on All Known Available Reasonable technologies (AKART – State of Washington's technology standard). In order to write defensible NPDES requirements for sediment protection, NPDES permit writers need critical permit writing tools, such as reasonable potential determinations to prevent sediment recontamination from stormwater discharges. Ideally, these permits would implement Waste Load Allocations (WLAs) from TMDLs for COCs in sediments. It is important that the appropriate state and federal programs be actively participating in these discussions to develop these tools.

Other source control requirements include the following: continuing with the LDW joint inspection team, adequate funding and staffing, continuing source studies, sampling for source tracing, monitoring for source control effectiveness, coordinating with NPDES permitting, enforcement, and other resources necessary to continue source control.

³ See the Lower Duwamish Waterway Source Control Status Report, which is updated to reflect progress on source control work. Ecology Publication No. 11-09-169, August 2011.

tracing, monitoring for source control effectiveness, coordinating with NPDES permitting, enforcement, and other resources necessary to continue source control.

Effective source control requires watershed pollution efforts on a large scale. The magnitude of this effort is much bigger than the sediment remediation effort. The two efforts must work together however.

The State of Washington's Model Toxics Control Act (MTCA) and Sediment Management Standards (SMS) are Applicable or Relevant and Appropriate Requirements (ARARs).

As the only state in the country with a sediment management regulation, Washington State made a huge commitment and investment in protecting its unique Puget Sound and other state waters from legacy and ongoing pollution by promulgating this regulation. As has been recognized by US EPA Region 10, the promulgated state standards in MTCA and SMS are ARARs under CERCLA. Moreover, because this site is governed by a *joint* MTCA/CERCLA administrative order, the procedural requirements in MTCA and SMS are binding.

These requirements diverge from CERCLA in two particularly noteworthy aspects: Setting cleanup levels at a lower excess cancer risk than the acceptable CERCLA risk range, and the use of natural background to set cleanup standards under certain circumstances. In addition, conducting a disproportionate cost analysis (DCA), which is analogous to the CERCLA nine criteria analysis, is a procedural requirement under MTCA. The DCA is discussed later in this letter.

MTCA requires cleanup levels to be set at natural background for certain contaminants of concern (COCs).

Under MTCA, cleanup levels are determined by the highest of calculated risk-based levels, natural background, and levels that can be reliably measured. WAC 173-340-700(6)(d). For the LDW sediments, this requirement results in setting cleanup levels at "natural background" for some COCs. Natural background is defined under MTCA as:

...the concentration of hazardous substance consistently present in the environment that has not been influenced by localized human activities. For example, several metals and radionuclides naturally occur in the bedrock, sediments, and soils of Washington state due solely to the geologic processes that formed these materials and the concentration of these hazardous substances would be considered natural background. Also, low concentrations of some particularly persistent organic compounds such as polychlorinated biphenyls (PCBs) can be found in surficial soils and sediment throughout much of the state due to global distribution of these hazardous substances. These low concentrations would be considered natural background. – WAC 173-340-200.

The LDW is using the EPA Ocean Survey Bold (*OSV Bold*) dataset to establish natural background concentrations, which are described in the FS. Ecology and EPA have determined that the 95 percent upper confidence limit (UCL95) on the mean is an appropriate descriptive statistic for natural background concentrations of the COCs.

Particularly for COCs with cleanup levels set at natural background concentrations, there is no evidence that these protective concentrations in sediment (and also in surface water) can be attained and sustained in an urban setting. Even with the best control of all identifiable point sources, urban environments have been shown to contain levels of contaminants, such as PCBs, in construction materials and other common and widely distributed items that will be released into the environment. Contaminants can migrate from these materials and be transported through aerial deposition and stormwater runoff into surface water and sediments. Therefore, loads greater than those yielding natural background concentrations are unavoidable unless all such point and nonpoint sources are controlled. In the absence of complete removal of all contaminated materials from the watershed and treatment of all contaminated stormwater runoff, sources will recontaminate surface sediments above cleanup standards set at natural background concentrations, regardless of the sediment remedy selected.

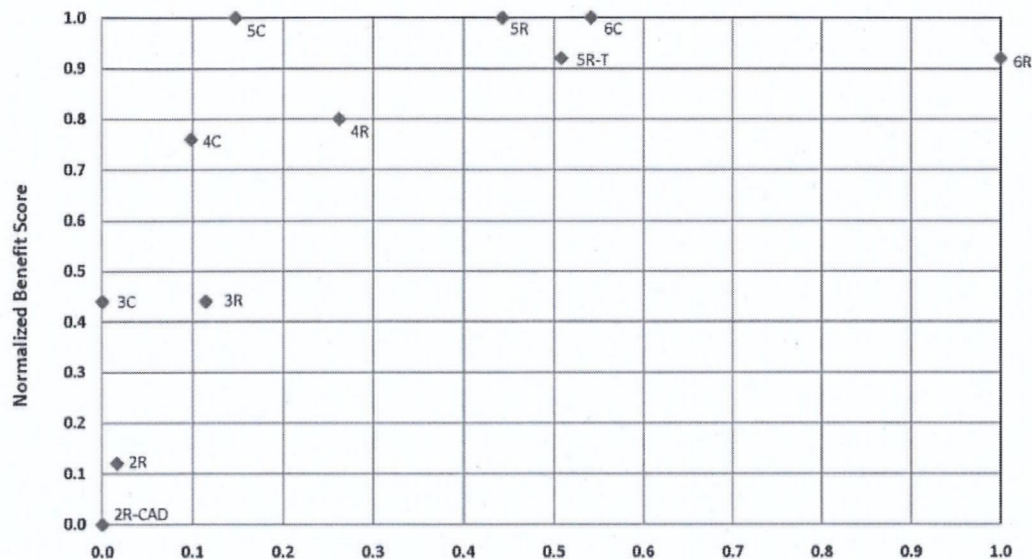
The lateral loading from surface water drainage within the LDW source area is not the only source for sediment recontamination. Surface water from the upstream Green River that flows into the LDW is also a concern and should continue to be evaluated. The RI/FS conducted a cursory look at pollution sources upstream out of the LDW study area. Evaluating upstream loading will be important information for determining the final remedy. Measuring upstream loading will need to be performed before, during, and after remedy construction. Ecology is concerned that the comprehensive upstream evaluation will solely be left to do under the umbrella of source control.

FS Alternative 6R is disproportionately costly.

The MTCA procedure for conducting a Disproportionate Cost Analysis (DCA), described in Section 11 of the FS, concluded that the most aggressive sediment remedy evaluated in the FS was disproportionate in cost. The purpose of the MTCA DCA is to determine the most permanent practicable alternative. An alternative is not considered practicable if the incremental costs of the alternative are disproportionate to the incremental degree of benefits provided by the alternative over other lower cost alternatives. The incremental costs of Alternative 6R (considered the most aggressive alternative presented in the FS) are disproportionate to the incremental benefits of all other alternatives.

This conclusion means that, given an acceptable array of alternatives, there is no need to consider more expensive and aggressive alternatives because their costs would likewise be disproportionate to their benefits. Figure 1 reproduces a graph of the draft MTCA DCA.

Figure 1 Normalized Benefits vs. Normalized Costs for Remedial Alternatives



Notes:

1. Costs and benefits were normalized as the difference between the value for an alternative and the minimum value of the alternatives divided by the range in values for all the alternatives.

Normalized Cost

$$\text{Normalized value} = ((\text{value}) - (\text{min alt})) / ((\text{max alt}) - (\text{min alt}))$$

R = removal-emphasis alternatives with upland disposal; R-CAD = removal-emphasis alternative with contained aquatic disposal; R-T = removal-emphasis alternative with soil washing treatment; C = combined technology alternatives

Alternative 5C is consistent with the state MTCA disproportionate cost analysis (DCA).

As shown in Figure 1, alternative 5C has significantly higher benefits than other alternatives while minimizing incremental costs. With the enhancements proposed, Ecology supports the proposal of alternative 5C. Briefly, those enhancements are currently known to be improving coverage of the cleanup areas by using enhanced natural recovery (ENR) - adding a thin layer of clean sand which will more quickly and more cost effectively achieve a greater degree of protection and lowering the remedial action level (RAL) for where ENR would be applied would also increase the level of protection.

A final CERCLA remedy is expected to require a technical impracticability (TI) waiver. Such a waiver is not available under state law.

State cleanup law does not provide for a TI waiver. Such a waiver was explicitly considered and excluded from the original MTCA rulemaking. Because this approach is unavailable under state law, Ecology would expect that a TI waiver be granted only as a last step in a transparent and stringent process that requires all practicable remedial action, including source control and any further contingencies, be undertaken to reduce risk to human health and the environment.

Ecology understands that it may not be technically possible to meet cleanup levels despite even the most aggressive cleanup actions and that at some point the TI waiver might be used. The TI waiver has only been done historically for groundwater remedies, never for sediment remedies and would therefore be precedent setting in this state. This is a primary concern for Ecology in that we do not want to make this a case study or common practice.

Expansive institutional controls (ICs) will be required to increase the protectiveness of any remedy, even with successful source control.

Under MTCA, the state can concur with a CERCLA ROD with a TI Waiver. However, the state has made no forgone conclusion regarding the use of ICs at this site. ICs cannot be used to meet cleanup standards in sediments - there is nothing in the SMS regulation that allows this. MTCA states that cleanup actions shall not rely primarily on ICs and monitoring where it is technically possible to implement a more permanent cleanup action for all or a portion of the site. However, Institutional Controls can be used provided they can be demonstrated to be effective in protecting human health and the environment from exposure to hazardous substances and protect the integrity of the cleanup action.

Also, given the cultural impacts to the surrounding community, Ecology encourages EPA to broaden their work on ICs at this site. ICs must be demonstrated effective and appropriate. Mitigation for replacing something lost such as fish consumption and tribal customs should be considered.

With intense usage of ICs, it becomes incumbent on source control in perpetuity to provide a fix for this situation. We need to continue work with the delegated federal WQ program to implement needed changes that will allow source control to be more effective.

Ecology needs to be involved in design and construction of sediment remediation.

Because of the inextricable relationship between source control and sediment remediation and Ecology's ongoing work at many MTCA sites proximal to contaminated sediment, Ecology will need to continue to be closely involved in all phases of the cleanup. This will include advising EPA on crafting language in the Proposed Plan and ROD, reviewing the scope of consent decrees, reviewing remedy designs, and providing oversight during construction and post-construction monitoring.

Implication of a final versus interim ROD.

An interim action is a more reasonable outcome under MTCA for the LDW scenario where requirements to achieve the most protective cleanup standards cannot be met. Since Ecology and EPA have worked together on this site for so many years and we are congruent on the issues described above, the State aims to concur with the proposed plan as a final ROD if the plan meets certain criteria. The concurrence would require that people could eat more fish unrestricted from the LDW and that even though some form of ICs will exist, all involved parties need to work hard to get to the natural background criteria.

In closing we thank you for the opportunity to comment on a proposed remedy. We look forward to help develop the final remedy and to continue our source control work at this site.

Sincerely,



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Washington State Department of Ecology

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